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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Zeira et al.

Application No.: 10/718,387

Confirmation No.: 2661

Filed: November 20, 2003

For: ASSIGNING UPLINK SLOTS TO
OPTIMIZE UPLINK POWER CONTROL
GAIN IN WIRELESS COMMUNICATIONS

Group: 2681

Examiner: Not Yet Known

Our File: I-2-0422.1US

Date: July 26, 2004

**COMMUNICATION RE FAVORABLE IPER BY
IPEA/US IN CORRESPONDING INTERNATIONAL APPLICATION**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This communication is to advise the Examiner of the favorable International Preliminary Examination Report (IPER) issued by the United States Patent and Trademark Office acting as International Preliminary Examination Authority in a corresponding international application. A copy of the IPER is enclosed.

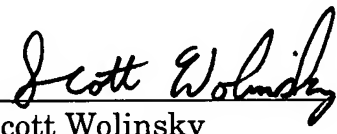
The original PCT claims correspond to the claims in this U.S. application. A copy of the approved claims as published is also enclosed.

Applicant: Zeira et al.
Application No.: 10/718,387

In view of the fact that PCT claims 1 - 23 have all been found to meet the international standards of patentability, prompt examination and allowance are respectfully requested.

Respectfully submitted,

Zeira et al.

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SW/ccw
Enclosures (2)

PATENT COOPERATION TREATY

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

VOLPE & KOENIG, P.C.

To:
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PCTNOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing
(day/month/year)

01 JUL 2004

Applicant's or agent's file reference

I-2-0422.1WO

IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US03/36881

18 November 2003 (18.11.2003)

20 November 2002 (20.11.2002)

Applicant

INTERDIGITAL TECHNOLOGY CORPORATION

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/US

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Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

VOLPE & KOENIG, P.C.

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference I-2-0422.1WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/36881	International filing date (day/month/year) 18 November 2003 (18.11.2003)	Priority date (day/month/year) 20 November 2002 (20.11.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): H04B 7/00 and US Cl.: 455/522, 460, 67.11, 67.13, 226.1, 226.2; 370/329, 330, 332, 333, 337		
Applicant INTERDIGITAL TECHNOLOGY CORPORATION		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>0</u> sheets.</p> <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>		
Date of submission of the demand 12 May 2004 (12.05.2004)	Date of completion of this report 23 June 2004 (23.06.2004)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Temica M. Davis Telephone No. (703) 306-0377	

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/36881**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)

Claims 1-23 YESClaims NONE NO

Inventive Step (IS)

Claims 1-23 YESClaims NONE NO

Industrial Applicability (IA)

Claims 1-23 YESClaims NONE NO**2. CITATIONS AND EXPLANATIONS**

Claims 1-23 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a method for controlling transmission power levels of signals in a spread spectrum time division duplex (TDD) communication system as explicitly described in independent claims 1, 7, 11 and 15-23.

Claims 1-23 meet the criteria set out in PCT Article 33(4), and thus meet industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----

NONE

CLAIMS

What is claimed is:

1. A method for controlling transmission power levels of signals in a spread spectrum time division duplex (TDD) communication system, the signals having frames with time slots for providing a communication, the method comprising:

(a) a first communication station transmitting a first signal having a transmission power level in a first time slot;

(b) a second communication station receiving the first communication and measuring a plurality of signal quality parameters of the first communication;

(c) determining a slot assignment rank for the first communication station based on the plurality of signal quality parameters; and

(d) assigning a second time slot to the first communication station for subsequent communications.

2. The method of claim 1 wherein the plurality of signal quality parameters include at least one of the following values: a weighted signal interference information value, a weighted code usage estimation value and a weighted fading loss estimation value.

3. The method of claim 2 further comprising:

(e) prioritizing a plurality of wireless transmit/receive units (WTRUs) currently communicating via a communication network; and

(f) assigning each of said plurality of WTRUs a slot assignment based upon the slot assignment rank.

4. The method of claim 1 wherein the first communication station is a base station (BS) and the second communication station is a wireless transmit/receive unit (WTRU).

5. The method of claim 1 wherein the first communication station is a wireless transmit/receive unit (WTRU) and the second communication station is a base station (BS).

6. The method of claim 1 wherein the plurality of signal quality parameters include at least one of the following values: a block error rate (BLER) value and a signal to interference ratio (SIR) value.

7. A method for controlling transmission power levels of signals in a spread spectrum time division duplex (TDD) communication system, the signals having frames with time slots for providing a communication, the method comprising:

(a) a first communication station transmitting a first signal having a transmission power level in a first time slot;

(b) a second communication station receiving the first communication and measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a block error rate (BLER) value and a signal to interference ratio (SIR) value;

(c) determining a slot assignment rank for the first communication station based on the parameters; and

(d) assigning a second time slot to the first communication station for subsequent communications.

8. The method of claim 7 further comprising:

(e) prioritizing a plurality of wireless transmit/receive units (WTRUs) currently communicating via a communication network; and

(f) assigning each of said plurality of WTRUs a slot assignment based upon the slot assignment rank.

9. The method of claim 7 wherein the first communication station is a base station (BS) and the second communication station is a wireless transmit/receive unit (WTRU).

10. The method of claim 7 wherein the first communication station is a wireless transmit/receive unit (WTRU) and the second communication station is a base station (BS).

11. A method for controlling transmission power levels of signals in a spread spectrum time division duplex (TDD) communication system, the signals having frames with time slots for providing a communication, the method comprising:

(a) a first communication station transmitting a first signal having a transmission power level in a first time slot;

(b) a second communication station receiving the first communication and measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a weighted signal interference information value, a weighted code usage estimation value and a weighted fading loss estimation value;

(c) determining a slot assignment rank for the first communication station based on the parameters; and

(d) assigning a second time slot to the first communication station for subsequent communications.

12. The method of claim 11 further comprising:

(e) prioritizing a plurality of wireless transmit/receive units (WTRUs) currently communicating via a communication network; and

(f) assigning each of said plurality of WTRUs a slot assignment based upon the slot assignment rank.

13. The method of claim 11 wherein the first communication station is a base station (BS) and the second communication station is a wireless transmit/receive unit (WTRU).

14. The method of claim 11 wherein the first communication station is a wireless transmit/receive unit (WTRU) and the second communication station is a base station (BS).

15. In a spread spectrum time division duplex (TDD) communication system, a base station (BS) for controlling transmission power levels of signals, the signals having frames with time slots for providing a communication, the base station comprising:

- (a) means for receiving, in a first time slot, a first communication having a transmit power level;
- (b) means for measuring a plurality of signal quality parameters of the first communication;
- (c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and
- (d) means for transmitting the second communication in the second time slot.

16. In a spread spectrum time division duplex (TDD) communication system, a base station (BS) for controlling transmission power levels of signals, the signals having frames with time slots for providing a communication, the base station comprising:

- (a) means for receiving, in a first time slot, a first communication having a transmit power level;
- (b) means for measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a block error rate (BLER) value and a signal to interference ratio (SIR) value;

- (c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and
- (d) means for transmitting the second communication in the second time slot.

17. In a spread spectrum time division duplex (TDD) communication system, a base station (BS) for controlling transmission power levels of signals, the signals having frames with time slots for providing a communication, the base station comprising:

- (a) means for receiving, in a first time slot, a first communication having a transmit power level;
- (b) means for measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a weighted signal interference information value, a weighted code usage estimation value and a weighted fading loss estimation value;
- (c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and
- (d) means for transmitting the second communication in the second time slot.

18. In a spread spectrum time division duplex (TDD) communication system, a wireless transmit/receive unit (WTRU) for controlling transmission power levels of signals, the signals having frames with time slots for providing a communication, the base station comprising:

- (a) means for receiving, in a first time slot, a first communication having a transmit power level;
- (b) means for measuring a plurality of signal quality parameters of the first communication;
- (c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and

(d) means for transmitting the second communication in the second time slot.

19. In a spread spectrum time division duplex (TDD) communication system, a wireless transmit/receive unit (WTRU) for controlling transmission power levels of signals, the signals having frames with time slots for providing a communication, the base station comprising:

(a) means for receiving, in a first time slot, a first communication having a transmit power level;

(b) means for measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a block error rate (BLER) value and a signal to interference ratio (SIR) value;

(c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and

(d) means for transmitting the second communication in the second time slot.

20. In a spread spectrum time division duplex (TDD) communication system, a wireless transmit/receive unit (WTRU) for controlling transmission power levels of signals, the signals having frames with time slots for providing a communication, the base station comprising:

(a) means for receiving, in a first time slot, a first communication having a transmit power level;

(b) means for measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a weighted signal interference information value, a weighted code usage estimation value and a weighted fading loss estimation value;

(c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and

(d) means for transmitting the second communication in the second time slot.

21. An integrated circuit (IC) for controlling transmission power levels of signals in a spread spectrum time division duplex (TDD) communication system, the signals having frames with time slots for providing a communication, the IC comprising:

- (a) means for receiving, in a first time slot, a first communication having a transmit power level;
- (b) means for measuring a plurality of signal quality parameters of the first communication;
- (c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and
- (d) means for transmitting the second communication in the second time slot.

22. An integrated circuit (IC) for controlling transmission power levels of signals in a spread spectrum time division duplex (TDD) communication system, the signals having frames with time slots for providing a communication, the IC comprising:

- (a) means for receiving, in a first time slot, a first communication having a transmit power level;
- (b) means for measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a block error rate (BLER) value and a signal to interference ratio (SIR) value;
- (c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and
- (d) means for transmitting the second communication in the second time slot.

23. An integrated circuit (IC) for controlling transmission power levels of signals in a spread spectrum time division duplex (TDD) communication system, the signals having frames with time slots for providing a communication, the IC comprising:

- (a) means for receiving, in a first time slot, a first communication having a transmit power level;
- (b) means for measuring a plurality of signal quality parameters of the first communication, the parameters including at least one of a weighted signal interference information value, a weighted code usage estimation value and a weighted fading loss estimation value;
- (c) means for assigning a second time slot for transmission of a second communication based on the plurality of signal quality parameters; and
- (d) means for transmitting the second communication in the second time slot.